

absolutely unable to recognize in the specimen any trace of the "proper wall," "canals," or "stolon passages" which are claimed to occur in *Eozoon*, or any reasons for regarding the calcite bands as the "intermediate skeleton" of a foraminifer. There are points in Sir W. Dawson's figure which might pass as "stolon passages," but they appear very different in a photograph, and the specimen agrees with the latter.

The Author, however, gives reasons for concluding that the case against the organic origin of the Tudor specimen does not rest on negative evidence alone; for though the rock is much contorted, the twin lamellæ and cleavage-planes of the calcite are not bent; and the fact that the crystalline bands cut across the bedding-planes further shows their secondary origin.

The rock in which the specimen was found is not "Lower Laurentian," and is included by Messrs. Selwyn and Vennor in the Huronian.

MISCELLANEOUS.

On Professor Jeffrey Bell's "Notes on Nomenclature of British Starfishes," with remarks on some Recent Crinoidea. By the Rev. Canon A. M. NORMAN.

The critical revision of names suggested by Prof. Jeffrey Bell (*Ann. & Mag. Nat. Hist.* for Dec. and Feb. last) seems intended for friendly criticism, as he himself assures me it was; and I therefore send the following items for the consideration of himself and others.

These notes, moreover, are partly corrective of my own use, as well as of that of others. Unfortunately in the preparation of my list, 'Museum Normanianum, I. Echinodermata,' I made the mistake of employing certain names as used by recent authors, instead of going into the matter again and seeing whether there were just grounds for changing nomenclature I had previously after mature consideration adopted.

Cribrella versus *Henricia*.

When Sladen wrote "Genus *Cribrella* (Agassiz), Forbes," he thereby intended, I take it, to express a truth, namely that *Agassiz* first used the name, that Forbes more accurately defined the genus, and that he employs it in Forbes's sense.

Professor Bell says that Forbes in using *Cribrella* (or *Cribella*) "perpetrated a robbery, which is now only (after half a century!) revealed to the world, which has been taught to revere his name. . . . He thought perhaps that he was justified, when he had placed the species in Nardo's genus *Linckia* (*Mem. Wern. Soc.* viii. p. 120) in 1839, and discovered his error and the fact that *Cribrella* was a synonym for that name a little later." The implication is

that Forbes found he had made a mistake in placing the species in *Linckia*, and therefore stole *Cribrella*. But Forbes distinctly gave the reasons for the change. "The name *Linckia* given it by Nardo must be rejected on account of a genus of plants having been so named previously; therefore I have adopted Professor Agassiz's proposed appellation"*. Moreover, Agassiz was probably cognizant at the time of what Forbes was doing, and most certainly approved, for he wrote shortly afterwards of Forbes's work, "Il circonscrit d'une manière plus rigoureuse mes genres *Uraster* et *Cribrella*" †. So much in defence of one whose "name" I still "revere."

But should *Cribrella*, as redefined by Forbes, or *Henricia*, Gray, be used? *Henricia* was published Nov. 1, 1840, *Cribrella*, Forbes, Dec. 1, 1840. The part of Forbes which contains the description of *Cribrella* contained pages 97-144, and considering the many woodcuts and the way in which that work was brought out must have been printed many months before Gray's paper. Under these circumstances I retain the opinion I held in 1865 that *Cribrella* should be used; but if others adopt a different course, they cannot be gainsaid. If there is a doubt in law, there can be none in justice, in using *Cribrella*, and is it not better "quieta non moveri."

1. Date of Dr. Gray's 'Synopsis.'

I cannot understand how it happened that in my 1865 paper I quoted this as 1841 instead of 1840. Others have no doubt copied the wrong date from me.

2. *Hippasteria phrygiana* or *Goniaster phrygianus*.

In establishing the genus *Goniaster* Agassiz placed four species in it:—1. *Asterias reticulata*, Linn.; 2. *A. equestris*, Linn. ‡; 3. *A. nodosa*, Linn.; 4. *A. tessellata*, Lamarck.

Gray took all these species out of *Goniaster* and placed them in genera as follows:—1. *Pentaceros reticulatus*; 2. *Hippasteria equestris*; 3. *Pentaceros nodosa* (sic); 4. *Anthenia tessellata* (the type of Lamarck).

What then became of *Goniaster*? Gray placed in it the forms which Lamarck had erroneously considered to be varieties of *A. tessellata*, but left out the type, which of course Agassiz had in mind. Still more extraordinary, he made his *Goniaster* exactly conterminous with the genus *Pentagonaster* of Linck, which name he does not here employ; but his very next genus is *Pentagonaster*, Gray, and contains a single species, *P. pulchellus*, Gray, of which species Linck knew nothing.

* Forbes, 'British Starfishes,' p. 101. Vide also "*Linckia*" in Agassiz's 'Nomenclator Zoologicus' both under "Echinodermata" and in "Index universalis."

† Agassiz, Monog. d'Echinod. viv. et foss. liv. 2 (1844), p. 4.

‡ Agassiz undoubtedly by this name referred to the *Asterias phrygiana*, Parelius.

Thus the *Goniaster* of Gray is in no sense the *Goniaster* of Agassiz, and the species he put into it appear in Sladen's 'Challenger' Report under the names *Pentagonaster semilunatus*, Linck (an indefensible specific name), = *Goniaster cuspidatus*, Gray*; at p. 266 it is stated that *Pentagonaster* (*Goniaster*, Gray) *regularis* "should be" discarded; and *Goniaster Sebæ* is discarded, being nowhere referred to †.

And what has become of the unfortunate *Goniaster* in the most recent writers? It finds a place in Perrier thus:—

"XXVIII. Genre. GONIASTER, sens. nov.

"*Goniaster obtusangulus*, Lamarck. Océan Indien (?)."

Here is a new genus *Goniaster*, Perrier, and in no sense whatever is it *Goniaster*, Agassiz. Sladen follows Perrier.

By the laws of nomenclature *Goniaster* must be retained so as to include at least one of the species which Agassiz placed in it. Which, then, of Gray's three genera—for we must go back to that time—must be made a synonym of the earlier genus. Luckily there can be no doubt upon the question. On *the very same day*, Dec. 1, 1840, on which the second part of Gray's paper, which contained the genera in question, was published, appeared also *Goniaster* in pt. 3 of Forbes's work, containing one and one only of Agassiz's species in it; and the synonymy thus becomes *Goniaster*, Agassiz, = *Hippasteria*, Gray. The second species which Forbes had placed in the genus became removable that same day, to be put into the genus *Porania* established by Gray. My own description of *Goniaster* in 1865 was advisedly drawn up to restrict its application to this one species, *Goniaster phrygianus* (Parelius) = *Goniaster equestris*, Agassiz. I at that time carefully weighed all the circumstances connected with the nomenclature.

Agassiz would no doubt have preferred that his name should be used with his first species as the type, for in recording a list of Gray's genera ‡, without further observation, he gives them thus:—

"*Pentaceros*, Link, Gr. (*Goniaster*, Ag.); *Anthenia*, Gr.; *Hippasteria*, Gr.; *Goniaster*, Ag. (Gr.)."

This clearly indicated that he regarded *Pentaceros* as his *Goniaster*, that Gray might do what he liked about *Anthenia* and *Hippasteria*, but that *Goniaster*, Gr., was not his *Goniaster*. However, we must take facts as they are and as they rest on Forbes's action.

3. Use of the Generic Name Palmipes.

Professor Jeffrey Bell can scarcely have weighed the word *Anseropoda*, Nardo, or he could not have suggested that it should take the place of *Palmipes*. It is the very climax of barbarity, a monster

* Gray writes *cuspidatus*, and quotes Linck as using *cuspidatus*; but Linck's word was *cuspidalis*.

† The *Goniodiscus Sebæ*, M. & T., is another thing.

‡ Mon. d'Echin. liv. ii. p. 3.

with a head of Latin, a tail of Greek, and the whole a plural form! Agassiz knew well what he was about when he rejected it and applied *Palmipes* to the genus*. Professor Jeffrey Bell calls attention to the loose way in which *Palmipes* is employed by Linck; and of course authors can use their judgment in writing either *Palmipes*, Linck, *Palmipes* (Linck), Agass., or *Palmipes*, Agass.; for although Agassiz gave Linck the credit of the genus, the last of these is quite correct according to the direction in Brit. Assoc. Rules:—"Names used by previous [*i. e.* præ-Linnæan] authors may often be applied with propriety to modern genera, yet in such cases they acquire a new meaning, and should be quoted on the authority of the first person who used them in this secondary sense."

5. *Date of Cœlasterias.*

Sladen's reference is quite correct and intelligible to me—"Verrill, Trans. Conn. Acad. Arts and Sci. 1871 (1867)." I take it that Dr. Gray's copy in Brit. Mus. bearing date 1869 is only a part of the reissue. My own copy of "Notes on the Radiata in the Museum of Yale College &c." is paged 247 to 611, and has ten plates; the several sheets are all dated, the last being "March 1871," and the first page (247) contains the description of *Cœlasterias*, above which is "Read Jan. 16th, 1867," and at the bottom of the page "Trans. Connecticut Acad. vol. i. February 1867." I may add that the work as far as p. 502 bears date "March 1869," and this perhaps represents the portion in B. M. Library.

6. *Lophaster furcifer.*

Sladen's date, *Chætaster borealis*, 1844, seems quite correct; at least, he has the author's own statement of date, "May 1844," to rely upon; and Düben withdrew the specific MS. name "*borealis*" and substituted for it *Solaster furcifer* himself (*vide* Düb. & Kor. p. 245, note).

7. *Marginaster.*

Some naturalists of very high standing, *e. g.* G. O. Sars, when they meet with a species manifestly generically distinct from allies prefer to allow a full general description to stand for both genus and species for a time in hope that other allied forms may be found which will more accurately show what should be regarded as generic and what as specific characters. I do not defend, I only state the custom; but in such cases it is surely correct to refer to the description, which was intended to be both generic and specific.

8. *On the Presence of Rare Forms on the East Coast.*

I presume that Prof. Bell is satisfied Dr. Sutherland's specimen

* *Vide* Anseropoda in the Nomencl. Zool. of Agassiz both among Echinodermata and in General Index.

of *Porania pulvillus* sent to the B. M. as "from Ross-shire" came from the east coast of that county; the exact locality is desirable. There is every reason why *Porania pulvillus* might be expected on the east coast of our islands; and the remarkable thing is that up to the present time I am as ignorant of its living on that side of our islands as I was in 1865. On the west coast of Ross-shire I have taken the species myself, the specimens recorded Brit. Assoc. Rep. 1866, p. 196, having been dredged there.

Palmipes placenta has recently been procured again in the Moray Firth by Mr. Thomas Scott ('Eighth Annual Rep. Fishery Board of Scotland,' 1890, p. 332).

Notes on Nomenclature of some Crinoidea.

I take this opportunity of noticing certain points in connexion with the nomenclature of recent Crinoidea.

Antedonidæ versus Comatulidæ and Comatulæ.

I am at a loss to understand how it is that Dr. P. H. Carpenter in his 'Challenger' Report and his many valuable papers on Crinoidea, though he employs the genus *Antedon* (= *Comatula*), constantly uses the term *Comatulæ*. Lamarek wilfully gave the name *Comatula* to a genus which he was aware had previously been described by Fremenville. We do justice in restoring *Antedon*, and the sooner therefore the word *Comatula* is decently buried the better. I venture to express a hope that this may be at last done. This can never be the case while the word is so improperly, as I venture to think, used in titles of papers such as the following:— "Variations in the Forms of Cirri in certain Comatulæ;" "Preliminary Report 'Blake' Comatulæ;" "Classification of the Comatulæ;" "Descriptions of new and little-known Comatulæ;" "Comatulæ of the Leyden Museum;" and the important "Report on the 'Challenger' Crinoidea," which contains the description of *Antedon* and its allies, is called "Part II. Comatulæ," and the family designated "Comatulidæ." Now in each of the above cases the correct word to have used would have been Antedonidæ. When *Comatula* ceased to be used the family name fell with it according to the rule—"Families should be uniformly named by adding the termination *idæ* to the name of the earliest known or most typically characterized genus in them." In accordance with this rule, when in 1865 I substituted Fremenville's earlier name for that of Lamarek, I of course dropped the term Comatulidæ, and placed *Antedon* in a Fam. Antedonidæ.

Comaster versus Actinometra.

Agassiz in 1835 instituted a genus *Comaster* for forms allied to *Antedon* in which "the arms are ramified instead of being simply furcate," and he gave as its type *Comatula multiradiata*, Lamarek.

In 1841 J. Müller formed the genus *Actinometra*, with *Comatula solaris*, Lamarck, as the type; and having examined "a spirit specimen in the Paris Museum, which had been identified with the *Comatula multiradiata* of Lamarck," he placed it in his genus *Alecto* (= *Antedon*); on which Dr. Carpenter remarks "his reference of it to *Alecto* is difficult to understand." Dujardin and Hupé removed *Comatula multiradiata* into the genus *Actinometra*. The *Actinometra multiradiata* as defined by Carpenter is considered by him to contain only a part of the forms included by Lamarck and by J. Müller under the same specific name. Another part of their forms Carpenter has named *Actinometra Peronii**; and in the paper in which this last species is described we read: "A remarkable specimen in the Bonn Museum was referred to the same type (i. e. *C. multiradiata*) by Goldfuss ('*Petrefacta Germaniæ*,' L., Dusseldorf, 1826-35, p. 202), who afterwards dissected it. This, however, may be left out of consideration altogether, as no example presenting such very remarkable peculiarities † as were described by Goldfuss has been met with during the last fifty years, and his type is now generally known by the name *Comaster*." But this *Comaster* of Goldfuss is not *Comaster*, Agassiz. *Comaster multiradiatus* (Lamarck) is Agassiz's type, and under his genus fall all such species as are congeneric with that species. In other words, *Comaster* is synonymous with *Actinometra*, J. Müller, and takes precedence of it ‡. I can see no way out of this. To use Dr. Carpenter's own words—"Comaster, Ag., is by no means the same as *Comaster*, Goldf." ("On the Genus *Solenocrinus*," Journ. Linn. Soc. vol. xv. 1880, p. 188). If there is such a form as was described by Goldfuss, which several authors have doubted, it will require the invention of a new generic name, which I would suggest might well be *Goldfussia*, while *Comaster* must undoubtedly supersede *Actinometra*.

Additional Notes on the Mollusk Lepton as a Commensal, and on the Crustacean Genus Bathynectes. By the Rev. Canon A. M. NORMAN.

Curiously enough, when consulting one of Stimpson's papers last night in reference to some North-Pacific Crustacea, I came across the following passage, which indicates a third instance of commensalism of the genera *Lepton* and *Gebia*.

* 'The Comatulæ of the Leyden Museum,' p. 214.

† Goldfuss's characters are given by Carpenter in his paper "On the Genus *Actinometra*," Journ. Linn. Soc. vol. xiii. 1877, p. 455.

‡ A reference to what Carpenter summarizes on the subject (Trans. Linn. Soc. ser. 2, Zool. vol. ii. 1879, p. 9) will show what a mess J. Müller made of the nomenclature. No doubt *Comaster* (or, as he calls it, *Actinometra*) as defined by Carpenter will be hereafter divided. When that division takes place, *Actinometra* would be resuscitated for his "Group 1. solaris," and *Comaster* retained for his "Group 3. typica;" each genus then would include its own type.